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IS 763 (1988): Method for determination of colour fastness of textile materials to peroxide bleaching [TXD 5: Chemical Methods of Test]



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IS : 763 - 1988

Indian Standard

**METHOD FOR DETERMINATION OF COLOUR
FASTNESS OF TEXTILE MATERIALS TO
PEROXIDE BLEACHING**

(First Revision)

UDC 667.016.473.4: 535.684.32

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Indian Standard

METHOD FOR DETERMINATION OF COLOUR FASTNESS OF TEXTILE MATERIALS TO PEROXIDE BLEACHING

(*First Revision*)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards on 20 May 1988, after the draft finalized by the Chemical Methods of Test Sectional Committee had been approved by the Textile Division Council.

0.2 This standard was first published in 1956 and has been revised to align it with ISO 105/N 1978 Textiles—Tests for colour fastness NO2 Colour fastness to Bleaching: Peroxide, issued by the International Organization for Standardization (ISO) and also to incorporate changes in line with other standards on colour fastness tests.

0.3 Colour fastness of textile materials is of considerable importance to the consumer. The fastness depends not only upon the nature and depth of shade of the dyestuff used but also upon the nature of the fibre and the method of dyeing or printing employed; the same colouring matter, when used in dyeing or printing different fibres or when applied by different methods upon the same fibre, may give vastly different results. Formulation of standard methods of test for determining colour fastness of textile materials to different agencies likely to effect change in colour is, therefore, necessary.

1. SCOPE

1.1 This standard prescribes a method for the determination of colour fastness of textile materials of all kinds and in all forms to the action of bleaching baths containing peroxide in concentrations commonly used in textile processing.

2. PRINCIPLE

2.1 A specimen of the textile in contact with adjacent fabrics is immersed in the bleaching solution, rinsed and dried. The change in colour of the specimen and the staining of adjacent fabrics are assessed with the grey scales.

3. SAMPLING

3.1 Sample to determine conformity of a lot of coloured textile material to a specification shall be selected so as to be representative of the lot.

3.2 Sample drawn in compliance with the relevant material specification or as agreed to between the buyer and the seller to evaluate colour fastness of the material in the lot shall be representative of the lot.

4. APPARATUS

4.1 Test Tube — having diameter and length such that the composite specimen when rolled will have a reasonably snug fit in the tube and be covered by the bleach bath.

4.2 Reflux Condenser — fitting the test tube to reduce evaporation from the bleaching bath during the test.

4.3 Two Adjacent Fabrics — each measuring 10 cm × 4 cm, one piece made of the same kind of fibre as that of the textile to be tested or that predominating in the case of blends, the second piece made of the fibre as indicated below or, in the case of blends, of the kind of fibre second in order of predominance or as otherwise specified.

*If the First Adjacent
Fabric is*

Second Piece to be

Wool, silk, linen, viscose,
polyester, acrylic

Cotton

Cotton, acetate

Viscose

4.4 Grey Scales — for evaluating change in colour and staining.

5. REAGENTS

5.0 Quality of Reagents — Unless otherwise specified, pure chemicals shall be employed in tests and distilled water (*see IS : 1070 - 1977**) shall be used where the use of water as a reagent is intended.

*Specification for water for general laboratory use (*second revision*).

NOTE — Pure chemicals shall mean chemicals that do not contain impurities which affect the test results.

5.1 Bleaching Baths — of the composition given in Table 1.

6. PREPARATION OF COMPOSITE SPECIMEN

6.1 If the textile to be tested is fabric, place a specimen 10 cm × 4 cm between two adjacent fabrics (see 4.3) and sew along all four sides to form a composite specimen.

6.2 If the textile to be tested is yarn, knit or weave it into fabric and treat as in 6.1, or form a layer of parallel lengths of it between the two adjacent fabrics (see 4.3), the amount of yarn taken being approximately equal to half the combined mass of the adjacent fabrics, sew along all four sides to hold the yarn in place and to form a composite specimen.

6.3 If the textile to be tested is loose fibre, comb and compress an amount approximately equal to half the combined mass of the adjacent fabrics (see 4.3) into a sheet 10 cm × 4 cm. Place the sheet between the two adjacent fabrics and sew along all four sides to hold the fibre in place and to form a composite specimen.

7. PROCEDURE

7.1 Loosely roll the composite specimen in the direction of the long edge, place the 4 cm roll into the test tube containing the appropriate

bleaching solution (see 5.1) and keep it well covered by the bleaching solution for the time and temperature indicated in 5.1.

7.2 Remove the composite specimen, rinse it for 10 min in cold running tap water and squeeze it. Open the composite specimen by breaking the stitching on all sides except one of the shorter sides and dry by hanging it in air in shade at a temperature not exceeding 60°C with the three parts in contact only at the remaining line of stitching.

7.3 Assess the change in colour of the specimen and the staining of the adjacent fabrics by the methods prescribed in IS : 768 - 1982* and IS : 769 - 1982† respectively.

NOTE 1 — Treated test specimens and the pieces of adjacent fabrics should have cooled after drying and should have regained their normal moisture content before evaluation.

NOTE 2 — In cases of doubt in the colour fastness rating as assessed by an observer, the assessment should be done by at least three observers and the overall average rating should be reported.

8. REPORT

8.1 Report the bleaching solution used, the numerical rating for change in colour of the specimen and the numerical rating for staining of each kind of adjacent fabric used individually.

*Method for evaluating change in colour (first revision).

†Method for evaluating staining (first revision).

TABLE 1 COMPOSITION OF BLEACHING BATHS
(Clause 5.1)

STARTING BATH (PER LITRE OF DISTILLED WATER)	BATH 1 (FOR NATURAL AND REGENERATED CELLULOSE)	BATH 2 (FOR NATURAL AND REGENERATED CELLULOSE)	BATH 3 (FOR WOOL AND ACETATE)	BATH 4 (FOR SILK)
Hydrogen peroxide* solution, ml	3	—	12.2	12.2
Sodium† peroxide, g	—	3	—	—
Sodium silicate‡ solution, ml	5	5	—	5
Sodium pyrophosphate§, g	—	—	5	—
Magnesium chloride , g	0.1	0.1	—	0.1
pH, initial value†† ± 0.2	10.5	11.5	9.3**	10.0**
Temperature, °C ± 2°C	90	80	50	70
Duration of treatment, h	1	1	2	2
Liquor ratio	30:1	30:1	30:1	30:1

*Containing 602 g/l H₂O₂ (500 k/jg H₂O₂).

†100 percent Na₂O₂.

‡Relative density at 20°C = 1.32; SiO₂/Na₂O ratio = 2.7 : 1

§SNa₄P₂O₇ · 10H₂O.

||MgCl₂ · 6H₂O.

††Adjust by addition of NaOH solution, if necessary.

**The pH of the bath at the end of the test should not be less than 9.0.